

organism densities by the dilution method, as often used in bacteriological and virus research. Other additions are important mainly for agricultural research, such as an account on Youden's Squares included in the new edition.

Authors and publishers alike are to be congratulated on the production of this extremely useful work under the present difficult conditions. The tables are printed on excellent paper, and it is very gratifying that despite greatly increased costs of production and an increase by eight pages, the price of the work has only been raised from 12s. 6d. to 13s. 6d.

F. R. SIMPSON.

Mather, K. *Statistical Analysis in Biology*. With a foreword by R. A. Fisher. London, 1943. Methuen. Pp. 247. Price 16s.

"Statistics is the concern of two different groups of scientist. The first group, of mathematical statisticians, is interested in developing the theory and extending the applicability of their subject, while the second group, which consists of non-mathematicians, is concerned largely with using the methods already available as tools in their own researches." This book is written for the users, not for the makers of statistics, by a biologist for biologists, and it may be said at once that Dr. Mather has succeeded admirably in his aim. In a previous book, *The measurement of linkage in heredity*,* the author had already shown his powers of explaining simply the principles and the application of statistical methods to the biological reader. We are now presented with a book of wider scope, which is written very lucidly, and contains many numerical examples very fully worked out. The book is thoroughly modern in outlook and deals particularly well with the small sample analysis as developed by R. A. Fisher and his school. The work should have a wide appeal to the many biologists who find the more advanced texts heavy going.

The twelve chapter headings of the book give an idea of its scope: introductory; probability and significance; distributions; tests of significance; the significance of single observations, sums, differences and means; degrees of freedom and the analysis of variance; planning experiments; the interrelations of two variables; polynomial and multiple regressions; correlation; the analysis of frequency data; estimation and information. These sections are followed by a glossary of terms and six pages of tables of the normal deviate, t , χ^2 , and the variance ratio at the 0.20, 0.05, 0.01 and 0.001 probability points reprinted in abridged form from Fisher and Yates' *Statistical Tables*. The reviewer was particularly impressed by the clear exposition of the analysis of variance, a method which is acquiring increasing importance as a tool in analysis.

To sum up, Dr. Mather's book is undoubtedly a very valuable addition to the statistical armoury at the disposal of biological workers and deserves a wide circulation.

H. GRÜNEBERG.

PSYCHOLOGY

Phillips, Gilbert E. *The Constancy of the Intelligence Quotient in Sub-normal Children* (Publications of the Australian Council for Educational Research). Melbourne, Melbourne University Press, and London, Humphry Milford. Pp. 86. Price 5s.

THIS publication by the Australian Council for Educational Research is an important contribution to the psychology of mental defect. For many years now it has been assumed that intelligence quotients remain constant; that is, that the ability of children retested at intervals remains in an unvarying relationship to that of the average child. A number of investigations, however, had shown that though this was true of the average results from large groups of unselected children, there was reason to believe that the facts were not uniform over the whole range of intellectual ability.

* See EUGENICS REVIEW, 1938, 30, 134.

It was decided to make a careful statistical analysis of the results of intelligence tests given at intervals over a period of nine years to 365 pupils of a residential school for mental defectives. This analysis revealed a progressive decline of the average I.Q. with each retest. Further examination made it clear that this effect was almost entirely due to a slowing-up and eventual cessation of intellectual growth at a much earlier age than the normal in many of the children with the lowest intelligence—i.e. in those with I.Q.s below 64. In two of these children growth ceased as early as the tenth year. The tendency to mature early was stronger among the emotionally unstable than among the more well-adjusted. On the whole, girls seemed to decline in I.Q. more than the boys.

As a result of these findings it was concluded that with mentally defective children a Binet I.Q. recorded at an early age cannot be relied on, and that several retests are necessary. Also that a low I.Q. at an early age is more serious than one found later, as it will mean that the intelligence of the child may cease to grow considerably before the normal age of about fifteen.

Dr. Phillips' excellent study is interesting from the methodological point of view because it shows how misleading figures based on the averages of large groups may be, and what careful planning and clear thought are necessary if psychologically significant facts are to be revealed.

EVELYN LAWRENCE.

BLOOD GROUPING

Harley, David. *Medico-legal Blood Group Determination: Theory, Technique and Practice.* London, 1943. William Heinemann (Medical Books) Ltd. Pp. ix. + 119. Price 12s. 6d.

THE author of this useful little book, who has had considerable experience in the medico-legal use of blood groups in the Inoculation Department, St. Mary's Hospital, London, here gives a concise and clearly written account of the theory, technique and practice of this method. The first major section (pp. 1-35) deals with the serological and genetic basis of the A-B-O and M-N systems of blood types, including a lucid and simple comparison of the von Dungern and Hirszfeld and the Bernstein theory of the heredity of the A-B-O system from statistical data and from family material. There are two main fields of application in forensic medicine, disputed parentage and criminal cases, where the identification of the blood group of stains (blood, semen, saliva) on garments, cigarette stubs, weapons, etc., may prove the innocence of an alleged assailant. The second main section (pp. 36-54) gives a detailed account of the technique and the precautions necessary to obtain critical results. The third main section contains a chapter on the legal history of blood group tests in disputed paternity, a report on sixty-five cases investigated by the author and a section on proposed legislation (pp. 55-63), followed by appendices (pp. 63-77) containing the complete text of the Bastardy (Blood Tests) Bill and the report by the Select Committee of the House of Lords on that bill. Finally, there is a chapter giving a detailed description of fifteen criminal cases examined by the author, including cases of manslaughter, murder and carnal knowledge (pp. 78-108), and a discussion followed by a list of eighty-nine references and adequate indices. The book gives a good idea of the present state of blood group determination in forensic medicine and its scope in the future.

H. G. HILL.